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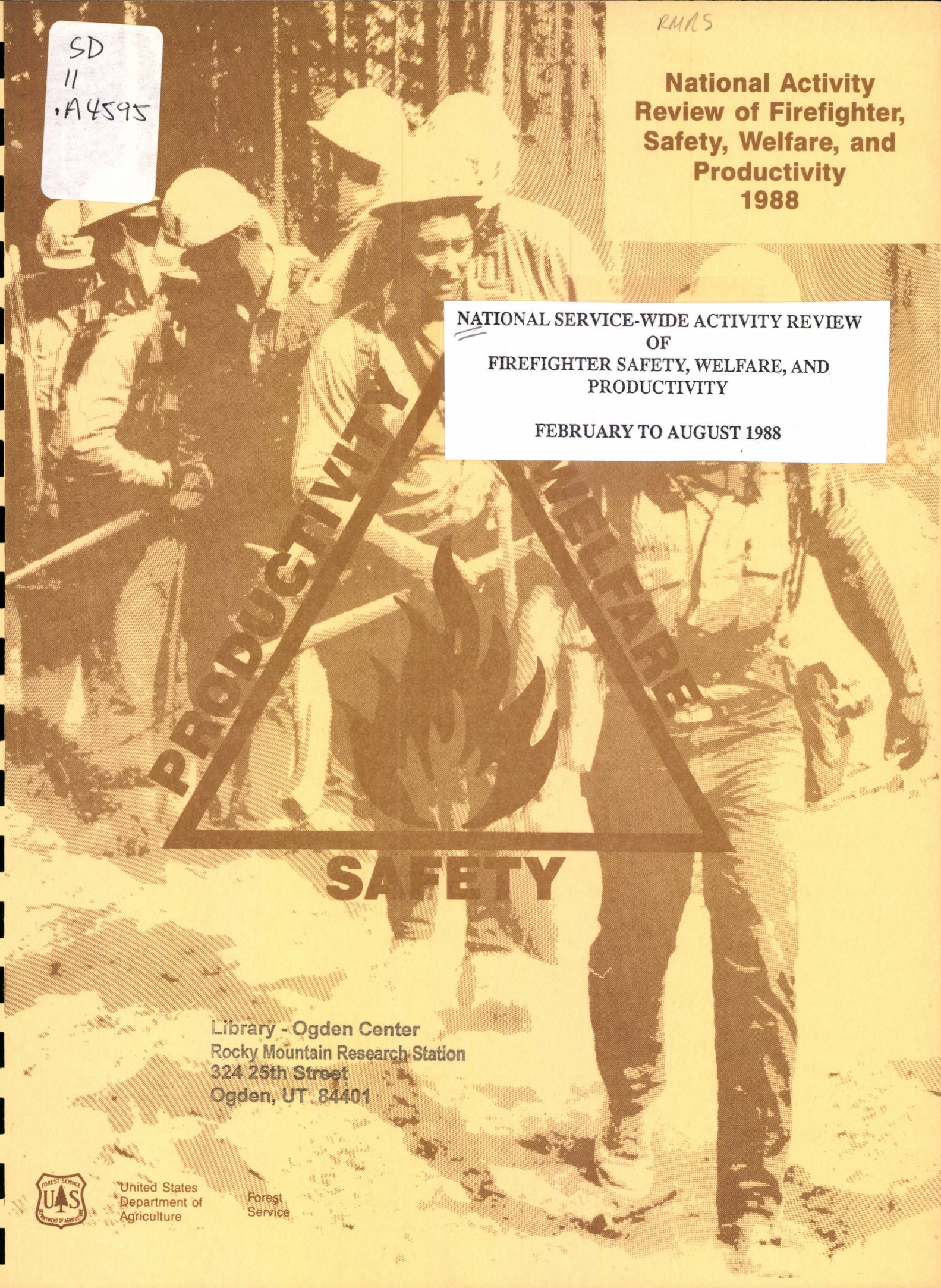
National Activity Review of Firefighter, Safety, Welfare, and Productivity 1988



NATIONAL SERVICE-WIDE ACTIVITY REVIEW
OF
FIREFIGHTER SAFETY, WELFARE, AND
PRODUCTIVITY

FEBRUARY TO AUGUST 1988

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Reply to: 5120 Date: DEC 07 1988

Subject: Activity Review

To: Regional Foresters, Station Directors, and Area Director

Enclosed is the completed National Service-Wide Review of Firefighter Safety, Welfare, and Productivity.

The mission of the review was to identify outstanding firefighter safety achievements to share with other units and to identify areas where the review objectives are not being met. Through an action plan appropriate steps can be taken that will lead to improved firefighter safety, welfare, and productivity.

This was a very extensive and successful effort that was made possible by a great deal of interest from the field. Thirteen fire positions were sampled and over 300 responses were received. We thank each of you that responded for taking time to provide a detailed response. I also want to thank the Review Team for the quality of the report and for their dedication to accomplishing this very important task.

It is now time for all of us to move forward with accomplishing the corrective steps identified in the Action Plan. It is important to understand that the problems indicated by the findings are not universal. They do, however, occur with sufficient frequency to be of significant concern. If the indicated corrective action is taken when and wherever appropriate, then overall firefighter safety, welfare, and productivity will be significantly improved.

L.A. AMICARELLA, Director
Fire and Aviation Management

Distribution:
Interior Agency Fire Directors, 30 each
State Fire Directors, 3 each
Research Stations, 3 each
Regions, 4 each
National Forests, 3 each
WO Engineering, 10
WO Safety and Health, 3
WO FFASR, 3
WO F&AM, 25
NWCG Fireline Safety Committee, 5

USDA - FOREST SERVICE
NATIONAL SERVICE-WIDE ACTIVITY REVIEW
OF
FIREFIGHTER SAFETY, WELFARE, AND PRODUCTIVITY
1988

ACTION PLAN

Approval _____ Date NOV 23 1988

L.A. AMICARELLA
Director, F&AM

_____ Nov. 25, 1988

ALLAN J. WEST
Deputy Chief, S&PF

National Servicewide Review of Firefighter Safety, Welfare, and Productivity
Action Plan
Washington Office and NWCG

Findings	*Unit*	*Action*	*Date Due*
1. Transporting firefighters is one of the most challenging aspects of Fire Management in terms of costs, safety and crew morale.	WO F&AM P&CR	Review and strengthen the driver shift length policy.	1/1/89
	WO F&AM P&CR, Eng	Examine methods for improving vehicle occupant protection in Forest Service & National Guard crew-haul vehicles.	10/1/89
	WO F&AM NWCG	Develop a mountain driving orientation course for use by National Guard and other casual drivers.	5/1/89
	WO F&AM NWCG	Establish a formal guideline: Consider use of Spike Camps, Coyote Tactics, and other methods when travel times exceed 1 hour.	4/1/89
	WO F&AM NWCG	Adopt the "Coyote Tactics" Definition and Guidelines for use as developed by the IHC Superintendants and approved by National Incident Commanders.	2/1/89
	WO F&AM NWCG	Ensure that the responsibility for determining if roads are adequate, and which types of vehicles can be safely used in adequately spelled out under the ICS. Also, that a mechanism exists to ensure road hazards are corrected.	2/1/89
2. Lack of leadership or direct supervision on the line by Strike/Task Force Leaders or Division Supervisors leads to unsafe operations.	WO F&AM NWCG	Provide sound direction concerning the geographic break-up and supervision within a division.	3/1/89
3. Improper management of work/ rest ratios and poorly fit personnel significantly reduces productivity.	WO F&AM Eng.	Finalize and distribute the MTDC, video tape on "Fatigue and the Firefighter's Environment."	3/1/89
	WO P&CR Eng., F&AM	Develop recommended muscular fitness goals that can be used for exercise prescriptions.	5/1/89
	WO P&CR Eng., F&AM BLM	Evaluate the impact and benefit of adopting a mandatory muscular fitness and flexibility test, to complement the step test, for type I crews and other positions as necessary (condition of hire).	10/1/89

Findings	Unit	Action	Date Due
	WO F&AM NWCG	Develop guidelines as to what constitutes quality R&R.	4/1/89
4. Application of fire suppression "basics" have fallen by the wayside.	WO F&AM NWCG	Develop fire behavior training at the 200 level (Crew Boss).	10/1/89
5. Firefighters and overhead are being allowed to occupy positions without adequate skills and ability to perform satisfactorily.	WO F&AM NWCG	Re-establish strategy and tactics training in existing skill level and incident management courses.	1/1/91
	WO F&AM NWCG	Evaluate the cost and performance of emergency and military crews to provide a basis for future training and mobilization decisions.	6/1/89
6. Deficiencies are occurring in management of the safety function.	WO F&AM NWCG	Evaluate the Safety Officer position to ensure the duties include the need to conduct a safety hazard analysis with recommended actions.	3/1/89
	WO F&AM NWCG	Evaluate the inclusion of the Safety Officer position in I-520 Training.	4/1/89
	WO F&AM NWCG	Develop guidelines and duties for the inclusion of a safety Officer position in the Area Command organization.	9/1/89
7. Firefighters are being subjected to hazardous conditions for which they are not trained or equipped.	WO F&AM	Clarify Forest Service responsibility for emergency service within the wildland/urban interface in the Forest Service Mutual Aid Policy Analysis effort and in cooperative/mutual aid agreements.	10/1/89
	WO F&AM NWCG	Provide direction and oversight to the preparation of a comprehensive study plan of the effects of forest fire smoke on firefighters.	10/1/89
	WO F&AM	Develop camera ready copy of the Carbon Monoxide (CO) self-paced study training course and recommend certification and distribution by NWCG.	5/1/89

Findings	*Unit*	*Action*	*Date Due*
7. Firefighters are being subjected to hazardous conditions for which they are not trained or equipped.	Regions/ Line Officer	Ensure that actions being taken by Forest Service employees in wildland/urban interface responses are in accordance with established policy and direction.	10/1/89
	Regions	Where appropriate, provide on-site orientation for overhead and crews not familiar with fuels, fire behavior, topography, etc., on incidents drawing firefighters from outside the area.	on going
8. Management controls and polices are not clearly understood and applied.	Regions	Ensure all Forest Supervisors attend the newly developed Fire Management for Line Officers Training.	on going
	Regions	Modify the Fire Management for Line Officers course for Regional application and make the information available to train District Rangers, Fire Staff, and key overhead positions.	10/1/89
	Regions	Require a high level of performance in the "management" of R&R.	on going
	Regions	Ensure crews are aware of "Conditions of Hire" that may affect their treatment.	on going
	Regions, Line Officers	Strengthen the performance evaluation for Incident Commanders that deal directly with Civil Rights & EEO responsibilities.	on going
	Regions	Implement the P&AM Model for Workforce Diversity and ensure the "Inappropriate Behavior" component is made available to all agencies that cooperate in fire suppression activities.	on going
	Incid. Mgt. Team	Utilize a Civil Rights/EEO Specialist where size and incident complexity dictate.	on going

National Servicewide Review of Firefighter Safety, Welfare, and Productivity
Action Plan
Regions and Incident Management Teams

Findings	*Unit*	*Action*	*Date Due*
1. Transporting firefighters is one of the most challenging aspects of Fire Management in terms of costs, safety and crew morale.	Regions/ Incid. Mgt. Team	Emphasize and enforce the role and importance of co-drivers, and the right of the National Guard or other drivers to discontinue operations when conditions are considered unsafe.	on going
	Incid. Mgt. Team	Monitor driver performance and strictly enforce driving policy.	on going
2. Lack of leadership or direct supervision on the line by Strike/Task Force Leaders or Division Supervisors leads to unsafe operations.	Regions	Assure all Crew Bosses receive "Supervisor And The Work Crew" training. within a division.	on going
	Regions	Assure that personnel are fully qualified at the Task Force/Strike Team Leader and Division Supervisor levels including having good interpersonnel and managerial /supervisory skills.	on going
	Incid. Mgt. Team	Ensure necessary overhead remain on the line.	on going
3. Improper management of work/ rest ratios and poorly fit personnel significantly reduces productivity.	Regions	Provide management leadership for promoting physical fitness; e.g., provide fitness expertise at District, Forest, and RO level, provide incentives/ motivation, integrate with wellness programs.	on going
	Regions	Ensure compliance with required step test procedures and administration.	on going
	Incid. Mgt. Teams	Utilize spike camps to limit travel and improve quality of rest.	on going
	Incid. Mgt. Teams	Continue emphasis on work/rest ratio and controlling long shifts.	on going
4. Application of fire suppression "basics" have fallen by the wayside.	Regions	Where possible, provide in-crew radio communications with a minimum of one programmable radio per crew.	on going
	Regions	Emphasize to all personnel that the extent of the emergency does not relieve anyone of a safety conscious attitude and resultant performance, but calls for an even deeper commitment to "Safety First"	on going
	Regions	Ensure overhead and firefighters receive Standards for Survival Training.	on going

Findings	Unit	Action	Date Due
	Incid. Mgt. Team	Conduct briefings & debriefings on fire knowledge and information on strategy and tactics at scheduled times, each day and communicate revisions as conditions change.	on going
	Incid. Mgt. Team	When practical, schedule Incident Commander and Crew Boss meetings.	on going
	Incid. Mgt. Team	Ensure radios are provided to all crew bosses.	
5. Firefighters and overhead are being allowed to occupy positions without adequate skills and ability to perform satisfactorily.	Regions	Ensure that evaluations, training, and experience requirements are reviewed prior to certification.	on going
	Regions Mgt. Team	Provide leadership to ensure proper administration of policy and standards in the hiring of emergency personnel.	on going
	Regions	Increase emphasis on the assignment and evaluation of trainees.	on going
	Incid. Mgt. Team	Implement the newly developed performance form and emphasize the value and importance of quality performance ratings.	
	Incid. Mgt. Team	Encourage overhead performance evaluations by subordinates.	on going
	Incid. Mgt. Team	Evaluate and promply replace poor performers on incidents.	on going
	Incid. Mgt. Team	Address limiting factors that affect firefighter capabilities, welfare, and safety during briefings.	
6. Deficiencies are occurring in management of the safety function.	Regions	Emphasize the use of a Safety Officer in all Type I and II team assignments.	on going
	Incid. Mgt. Teams	Evaluate the use of safety specialists.	on going
	Incid. Mgt. Team	Evaluate strategic and tactical decisions for safety risk and potential "Watch Out" situations.	on going

Findings	Unit	Action	Date Due
7. Firefighters are being subjected to hazardous conditions for which they are not trained or equipped.	Regions/ Line Officer	Ensure that actions being taken by Forest Service employees in wildland/urban interface responses are in accordance with established policy and direction.	10/1/89
	Regions	Where appropriate, provide on-site orientation for overhead and crews not familiar with fuels, fire behavior, topography, etc., on incidents drawing firefighters from outside the area.	on going
8. Management controls and polices are not clearly understood and applied.	Regions	Ensure all Forest Supervisors attend the newly developed Fire Management for Line Officers Training.	on going
	Regions	Modify the Fire Management for Line Officers course for Regional application and make the information available to train District Rangers, Fire Staff, and key overhead positions.	10/1/89
	Regions	Require a high level of performance in the "management" of R&R.	on going
	Regions	Ensure crews are aware of "Conditions of Hire" that may affect their treatment.	on going
	Regions, Line Officers	Strengthen the performance evaluation for Incident Commanders that deal directly with Civil Rights & EEO responsibilities.	on going
	Regions	Implement the P&AM Model for Workforce Diversity and ensure the "Inappropriate Behavior" component is made available to all agencies that cooperate in fire suppression activities.	on going
	Incid. Mgt. Team	Utilize a Civil Rights/EEO Specialist where size and incident complexity dictate.	on going

NATIONAL SERVICE-WIDE ACTIVITY REVIEW OF FIREFIGHTER SAFETY, WELFARE, AND PRODUCTIVITY

FEBRUARY TO AUGUST 1988

USDA - FOREST SERVICE

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NATIONAL SERVICE-WIDE REVIEW OF FIREFIGHTER SAFETY, WELFARE AND PRODUCTIVITY FEBRUARY TO AUGUST 1988

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NATIONAL SERVICE-WIDE ACTIVITY REVIEW OF FIREFIGHTER SAFETY, WELFARE, AND PRODUCTIVITY

February to August 1988

I. EXECUTIVE SUMMARY

MISSION

Evaluate firefighter safety, welfare, and productivity through a Service-wide activity review. Identify outstanding firefighter safety achievements and share this with other units. Also, identify areas where the review objectives are not being met and through an Action Plan initiate appropriate steps that will lead to improved firefighter safety, welfare, and productivity.

A. Objectives

The following objectives were identified to accomplish this mission.

1. To assess the level of attention paid to firefighter safety by incident managers.

2. To assess the level of firefighter and overhead knowledge of fighting fires safely.

3. To assess the level of attention paid to firefighter welfare by the incident management and support organization.

4. To assess the physical fitness of fire personnel and the effectiveness of fitness testing and development activities.

5. To assess the level of firefighter productivity being achieved, with emphasis on identifying constraining

6. To evaluate whether management oversight and controls are being applied as intended and whether or not they are cost effective.

7. To determine ways of overcoming identified shortcomings.

B. Background

Serious accidents and life threatening "near miss" incidents in wildland firefighting operations continue to be a major concern. Fire protection agencies suffered 17 wildland-related firefighter fatalities during the 1987 season, resulting primarily from aircraft, tree felling, vehicle, heart attack, and entrapment accidents. This represents 32 percent of the 53 urban and wildland firefighter fatalities that occurred nationally during 1987. According to NFPA records, this was the first year that wildland fire related fatalities accounted for the greatest percentage, further emphasizing the hazards of wildland and wildland/urban interface firefighting.

The high number of entrapments is signaling a continued warning. Over 140 firefighters found it necessary to deploy their fire shelters in "last resort" situations during the 1987 fire season. Unfortunately, one firefighter from a cooperating agency lost his life and several others suffered serious burns. Several hundred additional firefighters have been entrapped during the past 3 years.

A Forest Service national review of the 1987 Wildfire Situation in California and Oregon was recently completed. The review indicated firefighter welfare regarding health hazards from fire emissions and adequate rest are major issues of concern to firefighters and fire managers.

A serious emerging safety issue is increased involvement in the wildland/urban interface. Assuring firefighter safety in todays environment is particularily challenging because of the complexities of the interface which subject wildland and urban firefighters to hazardous conditions not normally found in their primary areas of responsibility. For instance, wildland firefighters are being exposed to structure, hazardous materials, railroad, vehicle, and landfill fires. The situation is further complicated by the need for the protection organizations to coordinate with and direct multi-agency personnel; to coordinate interagency communications and the use of specialized wildland and urban fire suppression equipment; and to manage independent homeowner actions and public safety.

These and other concerns generated the need for a Service-wide firefighter safety, welfare, and productivity activity review.

Data for this review was obtained by interviews, attending specialist meetings, and by input from a survey questionnaire. (A copy of the questionnaire is included as Appendix B). The questionnaire was submitted to the Regions for distribution on March 23, 1988. Thirteen fire positions were sampled and a total of 318 responses were received.

Six teams were formed by subject areas to analyze the questionnaire data. Representatives of the 6 teams met in Washington, DC during the week of July 19-23 to prepare the written report.

C. Executive Summary of Findings:

Though a total of 25 findings were identified in this report, the following eight are considered the highest priority for resolution. The highest priority means that these eight findings represent, in the opinion of the review team, the greatest pay-off for reducing firefighting accidents, improving firefighter welfare, and increasing productivity. Some of these eight represent a composite of findings as documented in the body of the report. The specific location in the report is noted by each of the eight findings.

It is important to understand that the problems indicated by the findings are not universal. They do, however, occur with sufficient frequency to be of significant concern. If the indicated corrective action is taken when and wherever appropriate, then overall firefighter safety, welfare, and productivity will be significantly improved.

1. FINDING: TRANSPORTING FIREFIGHTERS IS ONE OF THE MOST CHALLENGING ASPECTS OF FIRE MANAGEMENT IN TERMS OF COST, SAFETY, AND CREW MORALE. (Ref: A 1, E 1)

2. FINDING: LACK OF LEADERSHIP OR DIRECT SUPERVISION ON THE LINE BY TASK FORCE/STRIKE TEAM LEADERS OR DIVISION SUPERVISORS LEADS TO UNSAFE OPERATIONS.
(Ref. E 4)

3. FINDING: IMPROPER MANAGEMENT OF WORK/REST RATIOS AND POORLY FIT PERSONNEL CONTRIBUTES TO EXCESSIVE FATIGUE AND SIGNIFICANTLY REDUCES PRODUCTIVITY.
(Ref. C 1, D 1, E 1)

4. FINDING: APPLICATION OF FIRE SUPPRESSION "BASICS" HAVE FALLEN BY THE WAYSIDE (Ref. A 3, B 3).

5. FINDING: FIREFIGHTERS AND OVERHEAD ARE BEING ALLOWED TO OCCUPY POSITIONS WITHOUT ADEQUATE SKILLS AND ABILITY TO PERFORM SATISFACTORILY (Ref. E 5, F 4)

6. FINDING: DEFICIENCIES ARE OCCURRING IN MANAGEMENT OF THE SAFE FUNCTION (Ref. B 2, B 3, F 3, F 5, F 7)

7. FINDING: FIREFIGHTERS ARE BEING SUBJECTED TO HAZARDOUS CONDITIONS FOR WHICH THEY ARE NOT TRAINED OR EQUIPPED. (Ref. F3)

8. FINDING: MANAGEMENT CONTROLS AND POLICIES ARE NOT CLEARLY UNDERSTOOD AND APPLIED. (Ref. F)

D. Previous Activity Reviews and Related Reports

National Activity Review of the 1987 California/Oregon Fire Situation

National Activity Review of the 1985 Season

1985 Fire Entrapment Incident Review

1987 Management Review of Wildfires on California's National Forests

Region 5 Fire, Health, and Safety "Action Now" Plan

Anderson Creek Fatality Investigation Report

Region 4 Anderson Creek Fire Review

Region 4 Delta Team Report

"Review of Firefighter Fatigue" by Jukkala and Sharkey, 1987

II. COMMENDATIONS

The review team appreciates the high level of feedback and input that was provided by fire personnel for this report. The level of interest and concern enabled the review team to obtain an ample amount of quality data.

Region 6 has demonstrated an outstanding safety and health accomplishment during the past three fire seasons (1985 - 1987), resulting in their being awarded the Chief's Safety and Health Award for attention paid to firefighter safety and welfare during their 1987 fire emergency period.

Region 5 is commended for preparing the Management Review of Wildfires on California National Forests after the 1987 fire situation, and for implementing the Fire Health and Safety "Action Now" Plan from that review. Region 5 has also taken positive steps to improve rest and rotation of fire crews that has resulted in improved morale and productivity.

The Missoula Technical Development Center (MTDC) has demonstrated a high degree of concern for the safety, welfare, and productivity of firefighters for many years. Their concern has resulted in continuing technology, transfer of information, and the development of improved fire equipment.

Management and individual decisions to encourage fire shelter training, equipping, and timely deployment by firefighters as a last resort has saved numerous lives.

Finally, we commend the entire workforce and cooperators. We have been involved in several extremely difficult fire seasons that have resulted in long work days, long periods away from home, and much personal hardship. Fire personnel have been directly involved, whereas, the workforce that "stayed at home" and absorbed additional workloads is also commended.

III. STATEMENT OF FINDINGS

A. Objective:

To assess the level of attention paid to firefighter safety by Incident Managers.

1. Finding:

There is inadequate attention paid to the safe transportation of firefighters.

a. Situation: Numerous vehicle accidents resulting in firefighter injuries are occurring. During 1986 four firefighters were killed and several injured when a National Guard vehicle left the road and rolled. In 1988, two vehicle accidents injured 10 persons, one fatally.

b. Discussion: Transporting firefighters to and from the fireline continues to be one of the challenging aspects of management facing Incident Management Teams. Cost, safety, and travel times must be carefully weighed and options are often very limited. Often times Incident Management Teams are faced with no reasonable alternative, other than 2-1/2 ton trucks, dump trucks, or gamma goats in transporting firefighters to the fireline. The job then becomes how to best utilize these vehicles in the safest method and with the welfare of the firefighter in mind.

One problem is the use of drivers with unknown qualifications driving on forest roads; these may be AD, contract, or National Guard Drivers. Some type of improved liaison, better contract administration or a screening process is needed to provide the best management of the situation.

Another area of concern is the use of open vehicles to transport personnel under high dust, cold, or windy conditions. Some firefighters reported travel time of 3 hours one way from camp to the fireline. Under these conditions, "we are wearing people out traveling to and from these camps instead of spiking them out for 3 or 4 days at a time."

It is apparent that long shifts for drivers is a problem in many cases. The Forest Service Health and Safety Code - General vehicle travel status policy states:

- *"Shifts should never exceed 12 hours."*
- *"Following the first 24 hours of an emergency driving period, drive no more than 8 hours a day."*

Current interpretation of this policy provides too much flexibility and results in excessive driver shift lengths.

Two noteworthy quotes from the survey:

- *"Crew transportation in this case was more dangerous than the fireline duty."*
- *"The transportation to the Rest and Relaxation (R&R) facility was more dangerous than the fireline duty."*

c. Alternatives:

(1) Review and strengthen the policy statement on driver shift lengths.

(2) Develop a mountain driving orientation course for use by National Guard and other casual drivers.

(3) Incident Management teams monitor driver performance and strictly enforce driving policy.

(4) Establish a formal guideline: consider use of spike camps, coyote tactics, and other methods when travel time exceeds 1 hour.

(5) Re-emphasize the implementation and completion of key action items from the Anderson Creek Fatality Review. They include:

• Ensure that the responsibility for determining if roads are adequate, and which types of vehicles can be safely used, is adequately spelled out under the Incident Command System. Also, that a mechanism exists to ensure road hazards are corrected after they are identified to the proper personnel.

• Emphasize and enforce the role and importance of co-drivers, and the right of National Guard personnel to discontinue operations when conditions are considered unsafe.

• Examine methods for improving vehicle occupant protection in Forest Service and National Guard crew-haul vehicles.

2. Finding: **The transfer of current and accurate incident information between firefighters, line overhead, and the general staff is deficient.**

a. Situation: Current and accurate information available from line overhead is not always being used by higher level overhead in planning, evaluating, and supporting of suppression strategy, tactics, and related activities. Key communication equipment such as radios are not always available for overhead and crew bosses. There also have been many cases where batteries are in short supply.

b. Discussion: Overhead are not available on the line to observe and discuss what is happening with strike team leaders and division supervisors. Line safety officers are also not available to discuss safety concerns with crew leaders and other line overhead.

Respondents indicated that firefighters believe that overhead make incorrect decisions without really knowing what is occurring on the line. This occurs when some overhead do not get out or actually cover the line to observe actual conditions.

Effective **briefings** and **debriefings** by overhead and firefighters are not always occurring. Information and knowledge exchange about current fire behavior, safety issues, effectiveness of suppression efforts, logistical needs, firefighter conditions, etc., are not exchanged in a timely and effective manner.

In contrast, many teams have made effective use of Incident Commander and Crew Boss meetings at the end of each shift to assure effective communication.

Inadequate communication through radios or verbal communication on the line between the crew leader and overhead is also deficient. Every crew needs a radio to be effective and operate safely. One of the standard fire orders states "Remain In Communication With Crew Members, Your Supervisor, And Adjoining Forces." In addition, the remaining fire orders cannot be properly followed without good communications. Radio communication to the crew boss level is essential to fulfilling these communication needs.

When crews are required to cover a large geographic area extra radios are also needed to provide proper communication within the crew in order for the crew to be fully effective. The number may range from three to six depending on the type of crew and the planned use of the crew.

The incident base camp must be able to manage the use and support of radios (batteries and maintenance}. More crews are bringing their own radios which helps, but also presents additional problems in supporting different makes and models.

c. Alternatives:

(1) Briefings and debriefings on fire knowledge and information on strategy and tactics will be conducted at scheduled times during the day through the use of meetings or radio communications with line people.

(2) Make tactics and strategy information available to all crew leaders/ strike team leaders in addition to a verbal briefing from overhead prior to beginning each days shift.

(3) Encourage the use of Incident Commander and Crew Boss meetings by all Incident Management Teams.

(4) Incident managers ensure radios are provided to all crew bosses.

(5} Encourage home units to provide in-crew radio communication. Require each crew to bring radios that can be reprogrammed.

(6) Ensure adequate supply of batteries in National Cache System.

(7) Standardize the type of radios crews will use to reduce the number of battery types that must be stocked in incident base camp.

(8) MTDC continue search for a longer lasting battery.

3. Findings:

Fire suppression "Basics" tend to have fallen by the wayside.

a. Situation: Over 140 firefighters found it necessary to deploy their shelters in last resort situations during 1987. Eight entrapments involving over 50 persons occurred during the 1988 season prior to September. Several of these entrapments indicate a lack of attention to "Basic" fire-fighting methods.

b. Discussion: The Fireline Handbook is not routinely being read and adhered to by people occupying decision making positions. The Handbook is the most available means of accessing basic firefighting information. Responses indicate that too many Division supervisors and Strike team leaders are "course qualfied" and lack actual fire experience.

Constant priority is not being given to the basic 10 Standard Firefighting Orders and 18 Situations That Shout Watch out. Downhill/indirect line construction guidelines are not being followed. Other concerns that surfaced were the extensive use of underslung line in timber type fuels and the continuing failure to burn out lines.

Failure to adapt to changing conditions on the fireline was also cited as a major issue. Conditions change. People should not think that instructions in the Incident Action Plan, which was prepared hours before, are always in concert with current conditions. Crews were given instructions to work in areas where common sense and basic firefighting principles indicated no one should be. Some crews reported being forced into safety zones daily.

Of the greatest concern were the comments received relating to overhead treating the fire shelter as a tactical tool. It is perceived by crews that overhead realize the danger of the situation in which they are placing crews yet justify it by the presence of the fire shelter.

A Region 4 Delta Safety Team report found that the perceptions of many people working on fires is that we talk safety at home, but emphasize production and "to hell with safety" on the fireline.

c. Alternatives

(1) Emphasize the use of basic strategy and tactics in suppression operation (see Lynn Biddison's checklist in Appendix).

(2) Emphasize to all personnel that the extent of the emergency does not relieve anyone of a safety conscious attitude and resultant performance, but calls for an even deeper commitment to "Safety First."

B. Objective:

To assess the level of firefighter and overhead knowledge of fighting fire safely.

1. Finding:

Some overhead lack adequate knowledge of personnel limitations and capability.

a. Situation: Personnel limitations are not always visibly dealt with or understood by management and overhead in development of strategy and tactics before and during fire suppression. Unrecognized and sometimes misunderstood firefighter capabilities result in expectations not always being realistic.

b. Discussion: Overhead and firefighters begin to make poor decisions associated with their physical and mental condition when their working environment is influenced by long shifts and consecutive days on. These decisions and, at times, inappropriate actions compromise fighting fire safety.

Management's recognition and understanding of limiting factors is a concern of many firefighters and overhead. Response to the "request for information" included statements like:

- Some overhead expect Type II crews to be as productive as Type I crews.

- Crews from outside the area and/or working in strange fuel types are expected to be as effective as local crews.

- Varying experience, knowledge, and physical fitness levels appear not to be considered.

- Symptoms and effects of smoke, physical and mental fatigue, and dehydration are not recognized.

- A new crew to an incident is often considered a "fresh" crew.

- Limitations need be recognized and also accepted!

c. Alternatiaves:

(1) Include recognition of personnel limitations and their effects on fire fighter safety, welfare, and productivity in overhead training.

(2) Address limiting factors that effect firefighter capabilities, welfare, and safety during briefings prior to shift assignment.

2. Finding:

Safety Officer positions are sometimes not filled when needed and some Officers are not accomplishing expected results.

a. Situation: The Region 4 Anderson Creek Fire Review; National Activity Review of the 1987 California/Oregon Fire Situation; and the Region 5 Fire, Health and Safety "Action Now" Plan all pointed out weaknesses in safety management on incidents.

b. Discussion: The Safety Officer position is an important and integral part of the Incident Management Team. As a member of the Command Staff, the Safety Officer holds a powerful position, and is necessary to adequately meet the responsibilities of the Team. Some Type II Incident Management Teams have not always included a Safety Officer, however.

It is the Safety Officer's responsibility to ensure that Section Chiefs and Unit Leaders perform their safety related duties, and to provide expertise where needed. Too often, Safety Officers are attempting to accomplish this by themselves, or with very limited staff. Consequently, many hazards are not recognized and dealt with. Specialist positions, such as Transportation Safety, Aviation Safety, Health Officer, and EEO, are not filled as often as they should be.

Safety Officers are not perceived to be an effective member of the Management Team. Some believe this may have resulted from the change from a general staff position in the Large Fire Organization to a command staff position in the ICS. The command and general staff may lack understanding in the effective use of the safety function in the ICS.

In addition, safety oversight responsibilities at the Area Command level are unclear.

c. Alternatives:

(1) Emphasize the use of a Safety Officer in all Type I and II team assignments.

(2) Emphasize the filling of safety specialist positions on an as needed basis.

(3) Evaluate the inclusion of the Safety Officer position in I-520 training.

(4) Evaluate the duties of the Safety Officer position under ICS to ensure the duties include the need to conduct a brief safety hazard analysis with recommended corrective actions.

(5) Develop guidelines and duties for the inclusion of a Safety Officer position in the Area Command organization when appropriate.

3. **Finding:**

Knowledge of basic firefighting safety principles are lacking.

a. Situation: Basic and advanced firefighting training for firefighter and overhead personnel lacks some specific concepts about SAFETY EMPHASIS!

b. Discussion: Responders to the questionnaire expressed concern that many firefighters and overhead do not know and fully understand how to apply the 10 STANDARD FIRE ORDERS and 18 FIRE SITUATIONS THAT SHOUT "WATCH OUT." This topic was addressed more than any other.

Comments about the Orders and Watch out Situations included:

- All personnel must know and adhere to.

- Do not think that instructions in the Incident Action Plan, which were prepared hours before, are always in concert with changing conditions.

- Standard Fire Orders are not always given priority.

- The orders and situations need to be reviewed constantly, keep fresh in your mind!

Basic FIRE BEHAVIOR was also a major discussion item in this review. Use of this knowledge in planning and suppression tactics was raised by many respondents. Fire behavior knowledge is critical for Crew Bosses; however, training is not currently available at that level.

Safety knowledge in DOWNHILL line construction and indirect attack is also needed. Much of the past strategy and tactics skill information was lost in the development of ICS training.

MTDC has developed very extensive information regarding factors affecting firefighter welfare. The information includes basic principles which can be applied effectively during field operations. Subject areas include work and rest, heat stress, smoke and carbon monoxide, food and nutrition, labor-saving techniques and others. Technology transfer is needed to effectively use this information. MTDC is currently working on a video-tape.

c. Alternatives:

(1) Ensure overhead and firefighters receive Standards For Survival training.

(2) Re-establish strategy and tactics training in existing skill level and incident management courses.

(3) Develop fire behavior training at the 200 level (Crew Boss).

(4) Finalize and distribute the MTDC video tape on "Fatigue and the Firefighter's Environment."

C. Objective:

To assess the level of attention paid to firefighter welfare by the Incident Management and support organization.

1. **Finding:**

Firefighters are receiving inadequate quantity and quality of rest.

a. Situation: Established guidelines pertaining to work/rest ratios (reference appendix 5130 letter dated April 10, 1987) are not being adhered to by Incident Management Teams. Inadequate sleeping conditions are compounding fatigue levels.

b. Discussion: Improper work/rest ratios are continuing on incidents long after the initial suppression stages. Failure to adhere to established guidelines are attributable to management's lack of control over the situation rather than work demands associated with the control of the fire.

Shift lengths in excess of the 2/1 ratio were frequently reported. Information indicates that shift lengths of 18 hours were the rule rather than the exception. Line personnel reported working consecutive double shifts with only 1 shift off in between. The alternative to the 2/1 work/rest ratio is the planned 24 hour work/rest cycle. Responses indicate that there was little or no mention of its use.

Comments received stated that in cases where the 2/1 ratio was provided, that 8 hours off shift was inadequate rest time. Some crews drew tough assignments day after day while other crews drew easy ones. Eight hours off shift does not guarantee 8 hours of sleep. Studies show that 5-6 hours of sleep for day crews and 3-1/2-4 hours for night crews are more realistic figures.

Of the many factors affecting fatigue, the amount and quality of sleep an individual gets is the single most controllable factor. The past practices of compact camps, with sleeping areas close to all other camp activities, is no longer acceptable. The need for quiet, cool/warm, smoke free rest and sleep areas are of utmost importance if the benefits of the work/rest ratio are to be realized.

Special attention needs to be paid to the rest/sleep areas of night shift crews. The difficulty of adjusting to working a night shift are often compounded by an unsuitable sleeping environment during the day. Acclimation to night shift work is extremely fatiguing in itself and needs to be considered when assigning and evaluating crews. Quality sleep/rest areas for all line personnel regardless of shift assignment must become an integral part of the decision making process in the selection of camp locations.

In the 1987 fire season, Region 5 did implement some positive work/rest policies. Early on line officers realized the magnitude of the situation and developed action plans consistent with the established guidelines. These were as follows:

-Reassignment home after 21 days consecutive duty regardless of R&R.

-R&R centers which allowed for 2 days of rest in a smoke free environment for every 14 days of assignment.

Remobilization centers that were established provided some assurance of rest between incidents. However, some crews traveling directly between assignments were not given adequate rest before being placed into service. Crews with long travel times from home units, such as Eastern crews, were also not given adequate rest prior to assignment. Responses also indicated that rested crews were placed in remobilization centers for up to 48 hours additional rest before reassignment during a period of critical resource shortages.

c. Alternatives:

(1) Continue emphasis on work/rest ratio.

(2) Continue emphasis on controlling long shifts.

(3) Limit travel from camp to work site to 1 hour maximum, including both mechanical and foot travel.

(4) Rest crews that have just travelled to Incident and have been in travel or work status for 8 hours or more prior to assignment on the

travel or work status for 8 hours or more prior to assignment on the line.

(5) Utilize more spike camps to limit travel and improve quality of rest.

(6) Place more emphasis on providing good quality sleeping areas.

(7) Develop guidelines as to what constitutes quality R&R.

2. Finding:

"Coyote Tactics" are not being properly managed.

a. Situation: The definition and proper use of these tactics are not clearly understood by crews/IMT's and has resulted in poor acceptance of them. Serious safety and logistical problems exist at times in the current use of these tactics.

b. Discussion: When fully understood, the use of "Coyote Tactics" is accepted by the crews as a way to get the job done, with reduced need for transportation and increased sleep/rest time. The objections to its use come when there is inadequate support attention paid to the basic needs for food, personal hygiene, medical attention and sleeping/bedding arrangements. The length of time exposed to the "Coyote" situation and the degree of fire line activity also have a direct influence on how well it is accepted.

The final opposition to the use of these "tactics" is the subject of pay. Crews subjected to these operations without proper logisitical support feel the need for full compensation for all hours under these conditions.

A valid safety evaluation addressing the fire safety fundamentals (10 & 18) are not always included in the decisionmaking process. In addition, proper logistical support and contingency plans are not always developed prior to implementation of these tactics in order to ensure firefighter welfare.

c. Alternatives: NWCG adopt the "Coyote Tactics" definition and guidelines (see Appendix) for use as developed by the IHC Superintendents and approved by National !ncident Commanders.

3. Finding:

Changing work force has created new challenges for managers.

a. Situation: Treatment of firefighters with varying cultural backgrounds and

b. Discussion: Managers of incidents face the same problems of coping with a changing workforce as do all others managers in the Forest Service. Coping with diversity has now become a management "way of life." However, these issues may be more intense during an incident situation. There also may be more diversity present than in the typical workforce. Along with suppressing a fire, incident managers must continue to meet civil rights requirements, cultural and ethnic differences, and the social needs of the fire crews—and many incident managers do not feel confident in coping with the array of problems.

Human relation problems on incidents are compounded by unique circumstances such as varying treatment of Type I and II crews as well as open versus closed camps. With classification of crews by Type (I and II), the perception and some times real treatment has not been equal in work assignments or in amenities of camp, R&R, mobilization and demobilization. Attention needs to be paid to the capabilities and human feelings and not just to the crew distinction.

Incident Commanders and support organizations want to assure the safety and welfare of people from portal to portal. Closed camps have been used to maintain control. Many

questions on the legality of these situations and entitled pay are being asked. The forced closure of camps and compound type R&R facilities are not conducive to peoples' feelings of their own well being.

Maintaining a motivated and productive workforce requires a sensitivity and accommodation of different value systems, traditions, customs, and cultures. Sexual and racial harassment, unsolicited remarks and unwelcome advances cannot be tolerated by management.

c. Alternatives:

(1) All levels of overhead need to be trained in dealing with varying ethnic, and social backgrounds of firefighters.

(2) The closed camp issue needs to be explored by Fiscal and Personnel for legalities and responsibilities to the team.

(3) Ensure crews are aware of "conditions of hire" that may affect their treatment.

(4) Utilize a Civil Rights/EEO specialist where size and complexity dictate.

4. Finding:

Smoke/CO has become a major health concern.

a. Situation: High particulant levels from smoke were reported to be causing irritation of membranes in susceptible individuals. This exposure led to numerous respiratory problems that resulted in the filing of CA 1's, CA 2's, and OWCP cases. Lost time and personal medical discomfort were also experienced by many people after returning home.

b. Discussion: A proposal to study the chemical hazards of wildland fire-fighting is proposed by the California Department of Forestry Employees Association, the Johns Hopkins University School of Hygiene and Public Health, the California Department of Health Services, and the International Association of Firefighters.

A national review of the 1987 wildfire situation in California and Oregon indicated firefighter health concerns as a result of smoke were a major issue. Planned actions from the review included further definition of the problem, coordination of study plans and research efforts with Johns Hopkins University, and development of measures to mitigate or eliminate smoke related hazards.

In order to accurately assess the effects of forest fire smoke on firefighters, it is essential that a basic understanding of specific fuels, burning conditions, and combustion products be known over the full range of conditions encountered by firefighters. A study of nationwide scope is required, carefully defining fuels, weather, burning conditions, and emission components from various regions around the country. This would require a much broader based assessment than the collaborative study which has been proposed in California. The effort should involve, and be supported by, all Federal wildland firefighting agencies and the States. Funding has been provided in Fiscal Year 89 to develop a study plan.

c. Alternative:

(1) A comprehensive study is necessary, bringing the collective efforts of the entire wildland fire community to bear on this concern. This could be accomplished through the auspices of the National Wildfire Coordinating Group (NWCG).

(2) NWCG provide direction and oversight to the preparation of a comprehensive study plan addressing all aspects of the issue. Subsequent studies would be carried out by Forest Service Research, the MTDC, Johns Hopkins University, and other organizations as identified in the study plan.

(3) Develop camera ready copy of the Carbon Monoxide (CO) self-paced study and recommend certification and distribution by the NWCG.

D. Objective:

To assess the physical fitness of fire personnel and the effectiveness of fitness testing and development activities.

1. Finding:

Though able to pass the step test, many firefighters are not physically fit.

a. Situation: Respondents vary in their position. However, analysis of the questionnaire data indicates that a significant number of fire personnel:

-are overweight
-lack upper body muscular strength
-lack stamina/endurance
-are not sufficiently work-hardened and acclimatized
-lack mental toughness; a proper work attitude
-are improperly conditioned for rugged terrain
-have physical defects; i.e., bad knees or back problems, allergies, or injuries.

b. Discussion: Hard physical work and adverse environmental conditions combine to make the energy costs of firefighting very high and fatigue is an ever present hazard. Unlike most industrial jobs, the opportunities to mechanize and use engineering controls to make the job easier are severely limited. Therefore, fit, sound, and healthy firefighters who are less vulnerable to fatigue are needed to maintain safe, cost effective operations. Our review of the information available indicates no red flags on the fitness level of our personnel; however, we have sufficient data to support a caution level of concern. There exists a potential for serious problems of both productivity and safety if we do not improve the current level of physical fitness.

As in any survey, the responses to the questions varied. Most of the variation occurred between position groups involved with fire suppression and operation functions, and those in support and related functions. For example, hotshot superintendents, crew bosses and national incident management team member responses expressed the strongest feeling about the lack of fitness and endurance. People in support positions showed more satisfaction with the fitness level of Red Card holders.

As an example, analysis of the questionnaire data indicates that 100 percent of the Hotshot crew responses stated that meeting the step test qualification does not provide operations personnel with an adequate level of physical fitness to do their job. In contrast, 73 percent of the line officers responded that passing the step test does indicate an adequate level of physical fitness.

Overall, there was a very high concern for fitness, health, and welfare of firefighters by all respondents. A high percentage of respondents want on-the-]ob time and facilities for fitness conditioning, and more management concern and leadership in this area.

c. Alternatives:

(1) Develop recommended muscular fitness goals that can be used for exercise prescriptions.

(2) Evaluate the impact and benefit of adopting a mandatory muscular fitness and flexibility test, to complement the step test, for Type I crews and other positions as necessary (condition of employment).

(3) Provide management leadership for promoting physical fitness; e.g., provide fitness facilities, improve fitness expertise at the District, Forest, and RO level, provide incentives/motivation, integrate with wellness programs.

(4) Provide on-the-job fitness training time before and during fire season for those personnel who hold Red Card positions requiring an arduous fitness standard where such requirement is not included in their position description. (5 hours per week is already provided to personnel with such a requirement in their position description per the Wildland Fire Coordinating Guide).

2. Finding:

Though a number of respondents were critical of the step test, the step test is successful as designed.

a. Situation: A number of respondents criticized, or questioned, the validity of the step test:

-step test not always administered fairly, uniformly, and according to standards.
-validity of step test questioned: lack of confidence in results - desire for muscular strength and flexibility tests to complement the step test.

b. Discussion: This review indicates the step test, or the alternative 1 1/2 mile run, are not a problem. Both have been validated in numerous research studies. The step test is reasonably accurate, simple, convenient, and inexpensive predictor of aerobic fitness. However, many people believe that aerobic capacity alone is not sufficient to screen for firefighting fitness performance. They believe that additional tests are needed to measure muscular strength and endurance.

We know of no better aerobic fitness test for Forest Service needs and constraints than the step test. The pros and cons of developing additional tests for muscular fitness are beyond the scope of this review. Such tests would need to be examined for management and union acceptance as well as for potential adverse EEO consequences before such tests could be adopted for employment screening. However, we believe recommended muscular fitness goals can be utilized for fitness assessments and exercise prescriptions.

c. Alternative:

(1) Management ensure compliance with required step test procedures and administration.

E. Objective:

To assess the level of firefighter productivity being achieved with emphasis on identifying constraining factors and opportunities for improvement.

1. Finding:

Fatigue impacts firefighter productivity.

a. Situation: Firefighter productivity is strongly tied to fatigue. Many factors impact the fatigue of a crew or overhead. These range from shift

length, to sleeping arrangements, length of travel, to cumulative effect on length of assignment. The fire organization has a direct affect on how these items are managed.

b. Discussion: Long travel times to a fire assignment and long travel times from a camp to fire-line assignment can create undo fatigue.

Long work shifts while on a fire assignment contribute to the fatigue of any firefighter. The longer the shift the more impact on a firefighter's body. The longer the shift the longer it takes an individual to bounce back to perform another productive shift.

The more work shifts performed in successive days the longer it takes for an individual to bounce back to be highly productive.

Two other factors affecting fatigue are the quantity and quality of rest/sleep when off shift. A 1987 review indicated that day shift personnel were normally getting 5 to 6 hours of sleep per night. Night shift personnel were normally receiving 3-1/2 - 4 hours of sleep during the daytime, which is a change in the normal pattern for most people. This is compounded in that daytime sleepers have to deal with noise, high temperature, and uncalled for disturbances.

At times when R&R is planned to provide a chance for firefighters to rest and recover, the conditions do not change sufficiently to meet that objective; i.e., long travel, poor sleeping accommodations and uncalled for disturbances.

One of the best references on fatigue is *Soldier Performance in Continuous Operations*, July 1985; Research Note 85-86, U.S. Army Research Institute on the Behavioral and Social Sciences.

Another reference is *Review of Firefighter Fatigue California Fires 1987.* December 1987, by Arthur H. Jukkla and Brian Sharkey.

c. Alternatives: SEE C - 1

2. Finding:

Esprit de Corps directly effects productivity.

a. Situation: Improving Esprit de Corps was suggested as the primary action to increase productivity with little or no cost.

b. Discussion: Crew morale plays an important part in determining productivity and motivation. Morale is entwined with physical fitness, training, experience, and fatigue. Anyone of these factors can have a serious impact on crew, incident management team, support organization or agency.

Factors affecting morale include:

-Equipment to do Job
-Transportation
-Sleeping Conditions
-Food
-Attitude of Overhead and Support Organization
-Environmental Conditions
-Assignments

When anyone has a chance to improve any of these factors it will help to raise or improve morale, resulting in improving or maintaining productivity.

c. Alternatives

(1) Keep firefighters informed of their status, strategies, tactics, and how they will contribute to suppression objectives.

(2) Formally debrief crews at end of each shift.

(3) Keep overhead on the fire line.

(4) Provide signals that "we care" i.e., quality food, good camp facilities, and shorten delays.

(5) Forests cull-out troublemakers and malcontents during training and after each assignment.

(6) Forests provide line overhead that are energetic, positive, well trained, and have a high Esprit de Corps.

3. Finding

Physical fitness is a key factor in firefighter productivity.

a. Situation: Firefighting involves a lot of hard physical work under adverse conditions; i.e., smoke, heat, steep terrain, long hours, etc. There are limited opportunities to mechanize the job for on-the-ground workers. One means to maintain and enhance productivity is to improve the physical fitness of the firefighter. Crews that are more physically fit will tend to have higher productivity through increased endurance as well as fewer injuries.

SEE SECTION D FOR "DISCUSSION" AND "ALTERNATIVES" ON PHYSICAL FITNESS

4. Finding:

Leadership and supervision affect productivity.

a. Situation: In many cases there is a lack of leadership or direct supervision on the line by Strike Team Leaders and Division Supervisors. Crews feel they are left hanging out on their own with no direct tie to the fire overhead.

b. Discussion: The question must be asked "why there is no direct supervision of firefighting resources on the fire line?" The role of Division Supervisors to accomplish specific objectives on their assigned geographic portion of the fire line are specified in the Incident Action Plan. These are the key fire line overhead, on the ground, responsible for performing the jobs of leadership and supervision and all that goes with it. Some common reasons for Division Supervisors not fully carrying out their task may be:

(1) Too many resources assigned.

(2) Too much ground to cover.

(3) Not understanding their role.

(4) Other demands placed on their time.

(5) Poor leadership and supervisory skills.

(6) No direction or guidelines from the Operations Section Chief.

(7) Poor communication of strategy or tactics from top down.

These shortcomings indicate to the firefighter on the ground that the overhead (team) does not care about them, directly affecting productivity.

There is a need to instill the philosophy, learned through years of experience in both LFO and ICS, that the most critical line position, as regards suppression tactics and fireline safety, is the Task Force/Strike Team Leader (Sector Boss under LFO).

These concerns have surfaced in many reviews and critiques.

c. Alternatives:

(1) Provide sound direction concerning the geographic break-up and supervision within a division.

(2) Select personnel for overhead positions having good interpersonal and managerial/supervisory skills.

(3) Provide "Supervisor and the Work Crew" training to all Crew Bosses.

(4) Assure that personnel are fully qualified at the Task Force/Strike Team Leader and Division Supervisor levels. Actual experience in these positions is essential.

5. Finding:

Training and experience affects productivity.

a. Situation: Training and experience are like leadership and supervision in the fact that many comments were made about lack of well trained personnel or people with the experience necessary to deal with the situation. It is perceived that when something does not go well there is a managerial deficiency somewhere.

b. Discussion: As we converted from LFO to ICS some individuals were converted to new jobs and new procedures. The transition training and now "I" courses may not have properly prepared individuals for assignments in the new incident management system.

There appears to be a lack of knowledge of strategy and tactics at the firefighter level. There also appears to be a limit of knowledge by mid-level overhead to identify appropriate strategies and tactics and to explain them to those they supervise.

There is substantial support for strengthening on the ground experience requirements prior to qualification and certification.

In addition to the above items, comment must be made about obtaining firefighters during critical times in national mobilization. During 1985, 1986, and 1987, there was a need for more crews and overhead than wildland agencies normally called upon. This required managers to dig a little deeper into the ranks for resources. We must assume and insure that all managers maintain the established standards of training, physical fitness and experience.

Two responses illustrate a caution:

> *"When the well runs dry, stop the pump before you start sucking sand and really screw things up."*
>
> *"Rather than scrape the bottom of the barrel just because crew orders can't be filled, I believe we are better off, economically and politically, to stick with trained, fit and properly equipped crews and suffer the additional burned acreage."*

These responses must alert all line officers and fire managers to be aware of, and the importance of, physical fitness, proper equipment, mental conditioning, training, etc. As we dig deeper into our ranks, it is all the more important to do the things we know are right, and not to compromise standards.

c. Alternative:

(1) Reemphasize the "Basics" in firefighting training and provide refresher courses for rusty individuals being sent to incidents during massive mobilizations.

(2) Provide on-site orientation for overhead and crews not familiar with fuels, fire behavior, topography, etc., on incidents drawing firefighters from outside the area.

(4) Managers provide leadership to ensure proper administration of policy and standards in the hiring of emergency personnel.

(5) Evaluate the cost and performance of emergency and military crews to provide a basis for future training and mobilization decisions.

F. Objective:

Evaluate whether management oversight and controls are being applied as intended and whether or not they are cost effective.

1. Finding:

Management of R&R varies greatly.

a. Situation: Firefighters and incident managers believe consistent and clear guidelines are needed for R&R.

b. Discussion: The management and consequently the quality of the time spent in R&R varies greatly from incident to incident. In some cases the R&R centers and associated facilities appear extravagant while in others the conditions are so poor that it does not provide for quality rest and recuperation.

c. Alternatives:

(1) Develop national policy for the management of R&R.

(2) Develop national guidelines for the management of R&R.

(3) Direct incident management teams to develop R&R guidelines for their use.

(4) Require a high level of performance in the management of R&R.

2. Finding:

Management controls and policies are not clearly understood and applied.

a. Situation: Fire managers and management teams have been doing a good job of emphasizing safety; however, management controls and policies are not well applied.

b. Discussion: Some examples of poorly applied management practices include: inconsistency in the quality of R&R including a perceived double standard for overhead and crews; use of very long shift lengths particularly for drivers and firefighters; certification and use of unqualified personnel; lack of or improper use of coyote tactics; closed/open camp management; subjecting firefighters to hazardous conditions in the wildland/urban interface; prompt handling of substance abuse and EEO violations; and the lack of understanding of the appropriate suppression response and application of confine, contain, and control strategies. Lack of understanding and inconsistent application of management controls and policies adversely affect firefighter morale, Esprit de Corps, safety, welfare, and productivity.

c. Alternatives:

(1) Ensure all Forest Supervisors attend the newly developed Fire Manage ment for Line Officers training.

(2) Modify the Fire Management for Line Officers course for Regional application. Make the information available to train District Rangers, Fire Staff, and key overhead positions.

(3) Require a high level of performance from incident management teams.

3. Finding

Firefighters are being subjected to hazardous conditions in the wildland urban interface for which they are not trained or equipped.

a. Situation: Firefighters are first responders to a number of incidents besides wildfires. Incidents include, but are not limited to medical aid, hazardous spills, and automobile accidents. Responding personnel believe that they are being placed in hazardous situations that they are not trained or equipped to deal with.

b. Discussion: Closest forces and interagency cooperation concepts are influencing fire organizations to respond to all-risk emergency situations. Many individuals have been trained (most on their own) in Emergency Medical Services to serve as closes respondents to automobile accidents and other similar emergencies. In addition, some engine crews are backing up urban fire stations, under cooperative arrangements, subjecting themselves to structure protection and other all-risk commitments of the station. Engine crews, helitack, and others have acquired trauma, oxygen, and IV kits, and other specialized equipment at government expense to respond to the public need. These activities are placing employees in hazardous situations and increasing the liability of the individual and the Forest Service. Most of these activities are taking place outside of any clear Forest Service responsibility.

c. Alternatives:

(1) Clarify Forest Service responsibility for emergency service within the wildland/urban interface in the Forest Service Mutual Aid Policy Analysis effort and in cooperative/mutual aid agreements.

(2) Line Officers ensure that actions being taken by Forest Service employees are in accordance with established policy and direction.

4. Finding:

Firefighters and overhead do not always meet minimum qualification standards.

a. Situation: Firefighters and overhead are being allowed to occupy positions without adequate skills and ability to perform satisfactory.

b. Discussion: Current red cards are not always reflective of successful completion of required formal training and experience. The agencies are not taking full advantage of opportunities to fill trainee positions on complex incidents. Also, performance evaluations do not always reflect actual performance and substandard performers are being allowed to return to key positions. Managers, for these and possibly other reasons, are improperly certifying poor performers.

It was reported that overhead were not qualified to perform in some cases, and that some crews were expected to perform at a level that was above their limitations. Had proper evaluation been conducted, the safety of the crew and the individuals supervised by unqualified personnel would not be at question in this report. If used properly, the performance evaluation can be a tool to point out weaknesses in performance where corrective action can be applied before, not after, a problem.

c. Alternatives:

(1) Increase emphasis on the assignment and evaluation of trainees.

(2) Incident management teams emphasize the value and importance of quality performance ratings.

(3) Implement the newly developed performance evaluation form.

(4) Encourage overhead performance evaluations by subordinates.

(5) Ensure that evaluations, and training and experience requirements are reviewed prior to certification.

(6) Evaluate and promptly replace poor performers on incidents.

(7) Computerize the performance evaluation form.

5. Finding:

Management is not exhibiting a positive safety attitude.

a. Situation: Some incident management teams are giving a message of "Do as I say, not do as I do."

b. Discussion: This issue was also identified in the 1987 California/Oregon Fire Situation Activity Review. Symptoms of a breakdown in safety leadership are occurring in the fire organization. In some cases, leadership is not exhibiting personal observance of standard safety rules and practices in their actions and/or dress, creating a double standard. Recent studies in Australia have found that companies with good and bad records had the same safety program mechanism in place. The difference in the companies was their attitude concerning safety.

c. Alternatives:

(1) Emphasize that disregard for standard safety practices in a fire environment such as wearing baseball caps and tennis shoes, in a fire environment, will not be tolerated.

(2) Require that all agency personnel in management/supervisory positions be a positive role model for safety.

6. Finding:

Substance abuse and Civil Rights violations are occurring in fire emergency situations.

a. Situation: This review substantiates the 1987 California/Oregon Fire Situation Activity Review in that substance abuse and Civil Rights violations do occur on some fires and there is an opinion that some incident management personnel are reluctant to deal quickly and directly with these concerns.

b. Discussion: The 1987 California/Oregon Fire Situation Activity Review provides a very extensive discussion of this issue. The review team concurs with those findings and found no other significant issues. We also agree with the alternatives which are repeated below.

c. Alternatives:

(1) Review all ICS training modules and ensure adequate inclusion of Civil Rights considerations.

(2) Improve the awareness of non-Forest Service personnel of Forest Service policies and expectations related to substance abuse and Civil Rights. Develop a means for crew orientation at incidents. This orientation should include specific reference to the various avenues available to personnel to report cases of discrimination.

(3) Review the specific legal requirements related to the religious rights of Native Americans as well as the cultural practices that can be reasonably accommodated. Develop training materials and guidance to help Incident Commanders deal with questions of female supervision and other sensitive cultural issues.

(4) Develop a stronger focal point within the ICS organization to deal with the issues and the communication of policy and expectations to all incident personnel.

(5) Strengthen the performance evaluation for Incident Commanders that deal directly with Civil Rights and EEO responsibilities.

(6) Implement the Fire and Aviation Management Model for Workforce Diversity and ensure the "Inappropriate Behavior" component is made available to all agencies that cooperate with the Forest Service in fire suppression activities.

7. Finding:

Strategic/tactical decisions are affecting costs and safety risk.

a. Situation: Safety risks are not always adequately considered when making strategic and tactical decisions. This can sometimes result in higher than acceptable risk for firefighters and in excessive suppression and medical treatment costs.

b. Discussion: Serious accidents and life-threatening "near miss" incidents occurring in fire suppression operations continue to be a major problem. Several hundred firefighters were entrapped in "last Resort" situations during the last three years. Many sustained first, second and third degree burns and one individual from a cooperating agency lost his life. Investigation reports identify obvious and continuing violations of Watch Out Situations and the Standard Fire Orders. The building of indirect line and other strategic and tactical decisions have, in some cases, compromised safe operations.

Other decisions that lead to excessive tree felling and extra-wide fire line construction

are also subjecting firefighters to unnecessary risk and adding to suppression costs. "Light-hand on the land" tactics and careful analysis of fireline effectiveness is helping to improve the situation. Contain and confine strategies are requiring more indirect line in some cases.

c. Alternative:

(1) Ensure that all firefighters receive training in the new Standards for Survival Course.

(2) Emphasize to incident management teams the need to carefully evaluate strategic and tactical decisions for safety risk and potential Watch Out Situations.

(3) Reaffirm at all levels in the organization that it is acceptable to increase acreage lost to wildfire in order to reduce accidents and to protect the lives of firefighters.

(4) Fully train and implement "light-hand on the land" suppression tactics.

8. Finding:

National level statistics on firefighting related accidents are not readily available.

a. Situation: There is no system to accurately identify fire related injuries, illnesses and associated costs.

b. Discussion: Presently there is no formal system for gathering injury and illness data on all fire incidents for the development of trends and analysis. As a result, "like or similar" accidents continue to occur on different fire incidents with no corrective action being implemented to prevent recurrence. Another problem that contributes to the situation is there is no uniform system between the wildland fire agencies that will allow a cross-over of accident and injury information. Presently each injury that occurs on a fire incident is processed through the injured person's home unit and/or employing office/agency. With the implementation of the ICS system the tracking of injuries, accidents, and cost has become almost impossible because of the number of state and federal agencies that can become involved in a single incident. Also, the definition of a reportable injury, illness, and/or accident is not uniform between the wildland firefighting agencies.

c. Alternatives:

(1) Develop a national interagency system that will allow all wildland fire agencies to input injury, illness, and accident information utilizing to the extent possible the information available through the current Department of Labor, Workers Compensation Program.

(2) Direct incident management teams to provide an injury, illness, and accident summary to the hosting unit at the close out debriefing.

(3) Develop a standard definition for reportable injuries, illness, and accidents for use by all wildland firefighting agencies.

Recommended Regional distribution of "Request of Information" document for sampling various levels of management, support, and Forest firefighters.

# People to Sample	Positions
3	Line Officer
*	Incident Commander (National Team)
3	Incident Commander (other than National Team)
*	IHC Superintendent (Type I)
10% of Region	Crew Leader (Type II)
2	Safety Officer (National Team)
2	Regional/Forest Safety Officer
10	Logistics Functional Area (medical unit leader, ground support, and food unit leader)
10	Operation Functional Areas (Division Supervisor, Strike Team Leader, or Task Force Leader)
5	Planning Functional Area (Resources Unit, Situation Unit Leader, and Demobilization Unit Leader)
10% of Region	Type II Crew Liaison Officer and/or Agency Crew Coordinator
4	Forest Fire Staff or District FMO
10	Support Personnel (Dispatch, Mobilization Center, R&R Center, SOCO, ROCO, etc.)

*Sample has been completed during National meeting.

IV. APPENDIX

(As of 6/10)

A. ITINERARY

Action Plan to Accomplish Review	*Dates Planned*	*Dates Completed*
Phase I: Organization		
Team Notification	12/4/87	12/4/87
Organize Review (detailer)	2/1-12/88	2/22/88
Team Assignment (meeting)	2/29 - 3/1	3/1/88
Review reports/reviews	2/29	
Questionnaire Developed	3/1	3/18/88
Complete Phase I	3/14	
Phase II: Data Collection		
Team Sensing Assignment	3/1	
Meeting Schedule		
- National Safety Management	2/29 -3/4	
- National IHC Workshop	3/7 - 3/11	
- National IC Meeting	4/15 - 4/17	
Packet for Information Request to field	3/11	3/18/88
Information due from field	4/15	5/9/88
Team Review Data and Share input with OtherTeam Members	5/15	5/16/88
Phase III: Review Packet		
Each Team Member Review their data and submit to Team leader their finding by	6/20	
Each Team Leader assemble team data and prepare response to Lou by	7/5	
Each team findings will be mailed via DG to each Team Member in the review format by	7/15	
Each Team Member meet in WO A&FM to develop final packet and submit for approval (meeting)	7/26-28	
Phase IV: Final Report		
Complete final packet for Deputy Chief/Chiefs review.	8/15	
Action Plan approved	8/26	
Followup on Action Items w/report due to RF & WO Staff (selected Team Members) on	2/1/89 & 8/1/89	

B. REQUEST FOR INFORMATION

This information is to be used by the Service-wide review team for firefighter safety, welfare, and productivity. Your responses should always be listed in **order of priority.** A low rating is "0", a high is "10."

YOU ARE RESPONDING AS:

(Check only one of the following)

- ☐ Line Officer
- ☐ Incident Commander (National Team)
- ☐ Incident Commander (other than National Team) IHC Superintendent (Type I)
- ☐ Crew Leader (Type II)
- ☐ Safety Officer (National Team)
- ☐ Regional/Forest/State Safety Officer
- ☐ Logistics Functional Area (medical unit leader, ground support, and food unit leader)
- ☐ Operation Functional Areas (Division Supervisor, Strike Team Leader, or Task Force Leader)
- ☐ Planning Functional Area (Resources Unit, Situation Unit Leader, and Demobilization Unit Leader)
- ☐ Type II Crew Liaison Officer and/or Agency Crew Coordinator
- ☐ Forest Fire Staff/District FMO/State District Staff
- ☐ Support Personnel (Dispatch, Mobilization Center, R&R Center, SOCO, ROCO, etc.)

Recommended Regional distribution of "Request of Information" document for sampling various

I. TO ASSESS THE LEVEL OF ATTENTION PAID TO FIREFIGHTER SAFETY BY INCIDENT MANAGERS.

A. List areas where you feel Incident Management Teams paid the **most** attention to firefighter safety.

1. _____

2. _____

3. _____

B. List areas where you feel Incident Management Teams paid the **least** attention to firefighter safety.

1. _____

2. _____

3. _____

C. Identify practices and procedures by functional areas where you feel Incident Management Teams can improve on firefighter safety.

1. _____

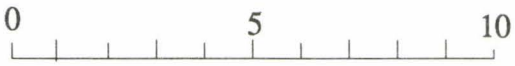
2. _____

3. _____

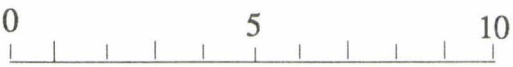
II. TO ASSESS THE LEVEL OF FIREFIGHTER AND OVERHEAD KNOWLEDGE OF FIGHTING FIRE SAFELY.

A. Knowledge Level

1. Rate FIREFIGHTERS knowledge of fighting fires safely.



2. Rate OVERHEAD knowledge of fighting fires safely.



B. Based Upon the Above Rating

1. List areas where the FIREFIGHTER could increase his/her knowledge level of fighting fires safely.

a. _____

b. _____

c. _____

2. List areas where OVERHEAD could increase their knowledge of fighting fires safely.

a. _____

b. _____

c. _____

III. TO ASSESS THE LEVEL OF ATTENTION PAID TO FIREFIGHTER WELFARE BY THE INCIDENT MANAGEMENT AND SUPPORT ORGANIZATIONS.

A. Name areas where you believe the firefighters welfare is given the **UTMOST** consideration by management and support organizations.

1. _____

2. _____

3. _____

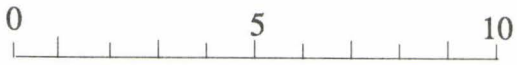
B. List areas where you believe improvements should be made for the firefighter welfare.

1. _____

2. _____

3. _____

C. Rate the overall welfare performance by incident management and support organizations.



D. List areas that you believe could raise the above rating.

1. _____

2. _____

3. _____

IV. TO ASSESS THE PHYSICAL FITNESS OF FIRE PERSONNEL AND THE EFFECTIVENESS OF FITNESS TESTING AND DEVELOPMENT ACTIVITIES.

Profile:

Your fire position is _____ .

This position requires a step test of _____ .

Your present step test score is _____ .

A. Does meeting step test qualifications provide operations personnel with adequate physical fitness to do their job. (Circle One)

YES NO

B. Does meeting step test qualifications provide support personnel with adequate physical fitness to do their job. (Circle One)

YES NO

C. List the most significant physical fitness deficiencies that impede a person's firefighting productivity/effectiveness.

1. _____

2. _____

3. _____

D. List those fitness deficiencies that you feel may compromise the safety of individuals and their co-workers.

1. _____

2. _____

3. _____

E. List additional information that you need to maintain/improve physical fitness.

1. _____

2. _____

3. _____

V. TO ASSESS THE LEVEL OR FIREFIGHTER PRODUCTIVITY BEING ACHIEVED, WITH EMPHASIS ON IDENTIFYING CONSTRAINING FACTORS, AND OPPORTUNITIES FOR IMPROVEMENT.

The objective of the activity review is to assess the level of firefighter productivity being achieved with emphasis on identifying constraining factors and opportunities for improvement.

A. How would you rate overall current firefighting productivity. Do not think just in terms of chains of line per person per shift. Give your response in terms of overall firefighter effectiveness.

☐ High ☐ Medium ☐ Low

B. List the key factors/barriers that result in low productivity.

1.

2.

3.

4.

5.

C. List the key factors that are necessary for high productivity.

1.

2.

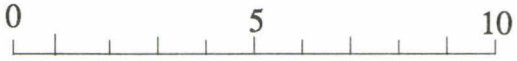
3.

4.

5.

VI. EVALUATE WHETHER MANAGEMENT OVERSIGHT AND CONTROLS ARE BEING APPLIED AS INTENDED, AND WHETHER OR NOT THEY ARE COST EFFECTIVE.

A. How do you rate incident management teams in leadership and oversight of firefighter safety, welfare, and productivity.



B. What management controls <u>were</u> applied well?

1. _____

2. _____

3. _____

C. What management controls <u>were not</u> applied well?

1. _____

2. _____

3. _____

D. What management controls and policies need to be developed.

1. _____

2. _____

3. _____

APPENDIX

C. COYOTE TACTICS

"Coyote Tactic" Definition: This tactic consists of a progressive line construction technique involving self-sufficient crews which build fire line until the end of a shift; remain overnight at/near that point; and then begin again on the next shift. Crews should be properly equipped and be prepared to spend several shifts on the line with minimal support from the fire camp.

1. Meals during "Coyote Tactic" shift may consist of rations and/or sack lunches.

2. The "Coyote Tactic" generally will not last over three or four shifts for any one crew.

3. Division Supervisors shall be responsible for establishing on and off shift times.

4. Operations personnel shall ensure that crews understand this "Coyote Tactic" policy before the crews go on the line.

5. Crews working "Coyote Tactic" shifts will be resupplied on the fire line as close to the R.O.N. point as possible.

"Coyote Tactic" Guidelines:

1. Can "Coyote Tactic" meet the standard firefighting orders and 18 watch out situations?

2. Can Emergency Medical Technicians be provided?

3. Can daily priority logistical support of food and water be provided?

4. Can daily, effective communication (verbal and written) be maintained?

5. Can a timely medivac plan be implemented?

6. Joint ownership by operation personnel and crew supervisors.

APPENDIX

D. FIRE SUPPRESSION BASICS

Lynn Biddison wrote the following in 1982, it was good advice then and it is good advice now.

We often talk about "fire suppression basics," but we are seldom specific about what we mean. The Fireline Handbook and the Firefighters Guide have some excellent material on the subject. The following are a few examples of what the "fire suppression basics" mean to me. Each person may be able to add some additional items of their own to this list.

I. Initial Attack.

1. Size up the fire.
2. Select key point for attack and go to work.
3. Continue work until the fire is controlled. If initial attack is not successful, continue to work on the flanks.

II. Line Location.

1. Avoid undercut lines and sharp angles in the line.
2. Construct a "black line" wide enough to control the fire, but do not waste time building a freeway.
3. All lines across slopes must be trenched.
4. Limb trees on either side of the line.
5. Make use of a "Hot Shot" crew in advance of main line construction.
6. Where possible, have crews take advantage of retardant drops. Do not regularly drop retardant unless crews are there to take advantage of it.
7. Use a line locator ahead of the line building crew (Can be part of crew overhead).
8. Fall all snags near line, both inside and outside of the burn.
9. When the fire has long fingers, cut across and burn out rather than building line around each finger.
10. Clean all lines to mineral soil.
11. Dispose of material so it does not interfere with mop-up.
12. Where possible, keep one foot in and one foot out of the burn.
13. Take advantage of natural barriers.

14. Overhead will use every opportunity to train someone not doing the job properly.

15. Establish accomplishment objectives (expectations) for each crew or module. Have each Task Force/ Strike Team Leader and Division Supervisor report actual accomplishment to Plans at end of shift.

16. Bring all tools and other equipment off the line at end of each shift and return them to camp.

17. Keep hand tools sharp and in good condition. Sharpen tools each time you take a break.

18. Use Crew Time Reports.

19. Flag spot fires over the main line so they can be checked.

20. Park vehicles so that roadways are not blocked.

21. When on the line, leave keys in vehicle. When in camp, turn keys into Transportation.

22. In mop-up, feel out hot spots with bare hands, no with gloves on.

23. If a crews is split up for helicopter flight to the line, start working as soon as you get to the line. Don't wait for the remainder of the crew, they will catch up when they arrive.

24. Do not be critical of other Agencies assist them to meet control objectives.

25. Never take short cuts through the unburned,

26. Every person must have only one Supervisor.

27. Critique actions on every fire regardless of how small or large.

28. Bore in and bear down on performance and safety standards.

29. Instill a sense of urgency in those you supervise.

III. General

1. Task Force/Strike Team Leader walk assigned section of the line at least three times per shift (need to be where problems are occurring or are anticipated).

2. Division Supervisors walk their assigned section of the line at least once per shift (need to be where problems are occurring or are anticipated).

3. Operations Chief must get out on the ground. The job can't be done solely from a pickup or helicopter.

4. Crew Supervisor take full responsibility for the crew both in and out of camp.

   a. Be sure crews are fed and have proper sleeping facilities in camp.
   b. Be sure crews are up, fed, and ready to go on the line by the time schedule.
   c. Be sure crews produce expected work on the line.
   d. Deal with problems as they occur and not after the fire.

5. Each supervisor must insure everyone he/she supervises performs the job to standard. **Do not accept poor performance.** When it occurs, secure replacment and document the poor performance.

6. Have shift change accomplished so that crews are on line, ready to work before sunrise and before sunset.

7. Keep fire camps to a maximum of **500** people.

8. Use "Spike Camps" and "Coyote Tactics."

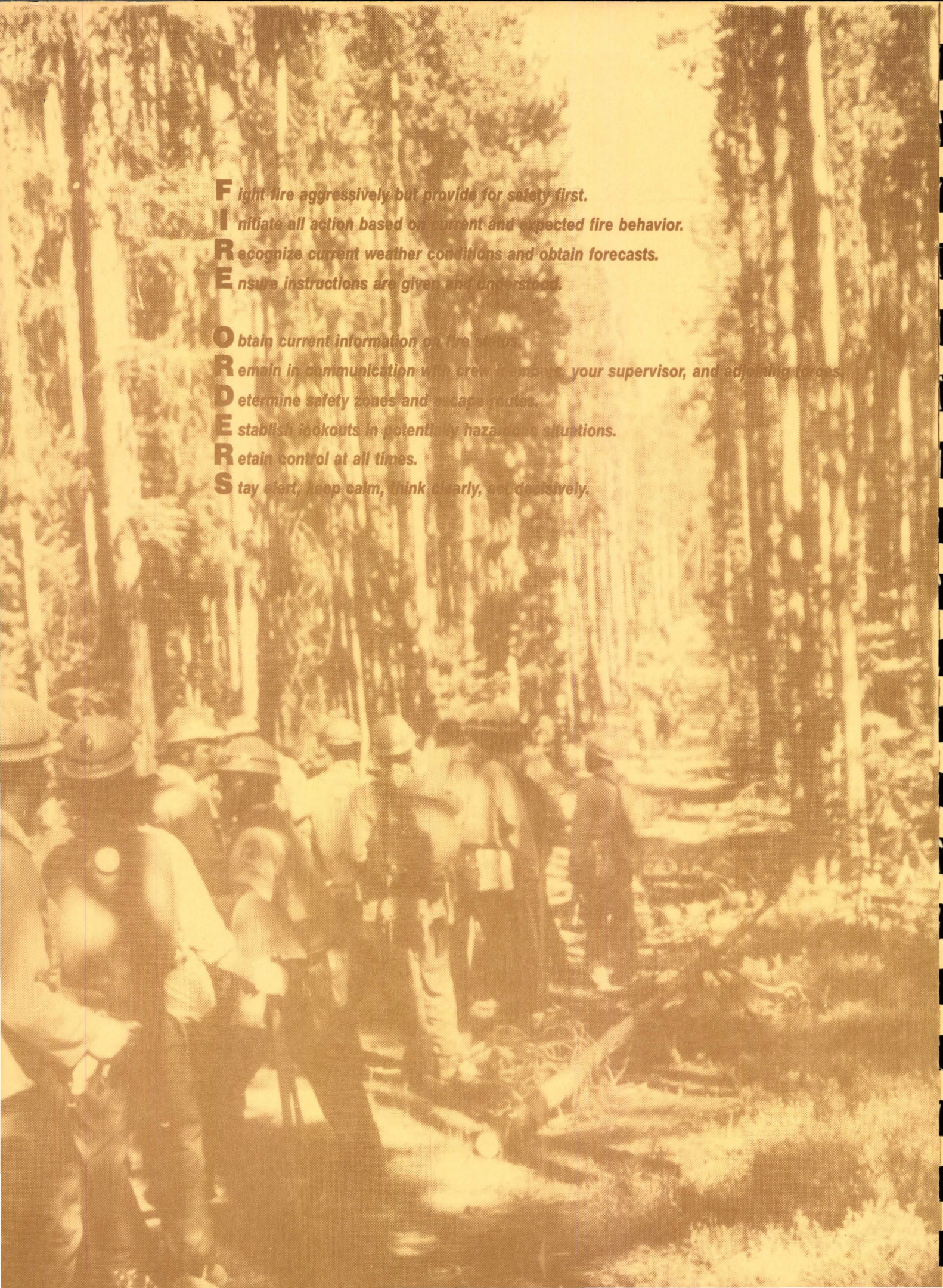
9. Make use of rations and lunches rather than "Hot Meals" for short period fires.

10. Send crews and overhead directly from fire camp to airport or their home unit, not to an intermediate demob center.

11. Do not depend on helicopters to move crews. If a helicopter is not available, do not wait for one — **walk** to the line. Same idea for ground transportation — if you canot drive there safely, get out and walk.

12. When mopping up with water, pair up nozzleman with person with hand tool.

13. Never leave the line until you are properly relieved and have briefed your relief.



F *ight fire aggressively but provide for safety first.*

I *nitiate all action based on current and expected fire behavior.*

R *ecognize current weather conditions and obtain forecasts.*

E *nsure instructions are given and understood.*

O *btain current information on fire status.*

R *emain in communication with crew members, your supervisor, and adjoining forces.*

D *etermine safety zones and escape routes.*

E *stablish lookouts in potentially hazardous situations.*

R *etain control at all times.*

S *tay alert, keep calm, think clearly, act decisively.*